

REMARKS

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Claim Amendment

Claim 42 has been amended to depend from claim 34. No new matter has been added to the application by this amendment.

Rejection Under 35 U.S.C. § 103(a)

The rejection of claims 34, 35, 37, 38, 40-42 and 47-50 under 35 U.S.C. § 103(a) as being unpatentable over Hoshino et al. (U.S. 6,117,592) further in view of Gutjahr et al. (U.S. 4,273,582) and Jones et al. (U.S. 4,937,210) is respectfully traversed.

The Position of the Examiner

The Examiner takes the position that Hoshino et al. teach a method of making a porous metallic material comprising steps for forming an aqueous mixture of one or more metal powders, an organic solvent, a water-soluble resin binder, a plasticizer and water, and steps for forming a molded product, burning and sintering. The Examiner admits that Hoshino et al. fail to teach a water-soluble metal salt, and dextran.

The Examiner asserts that Gutjahr et al. teach a method of making a porous metal sintered body comprising forming a mixture of one or more metal powders in elemental or soluble salt form. The Examiner takes the position that it would have been obvious to one of ordinary skill in the art to modify the teachings of Hoshino et al. to select a metal powder comprising a soluble metal salt as taught by Gutjahr et al., in order to enhance the quality of the porous body.

The Examiner further asserts that Jones et al. teach a method of making porous inorganic bodies, and teaches the use of viscosifying agents, such as polyvinylalcohol, dextran, starch, and hydroxyethylcellulose. The Examiner takes the position that one of ordinary skill in the art would appreciate that the resin binder compounds taught by Hoshino et al. and the viscosifying agents taught by Jones are substitutes, as they comprise many of the same compounds and serve

substantially the same purpose. Thus, the Examiner asserts that it would have been obvious to one of ordinary skill in the art to substitute the binder of Hoshino et al. (e.g., PVA) with dextran, as taught by Jones.

Applicants' Arguments

Applicants respectfully disagree with the Examiner's position for the following reasons.

As discussed above, the Examiner admits that Hoshino et al. fail to teach a water-soluble metal salt and dextran, both of which are required by Applicants' claims. The Examiner relies on two secondary references, in an attempt to render Applicants' claims obvious. However, the secondary references (Gutjahr et al. and Jones et al.) are entirely different from the present invention.

Gutjahr et al. use a volatile grained metal salt (e.g., NaCl) to form (i.e., to fill) the corresponding porous shape. The grained metal salt is not used as a synthetic raw material. (Please see columns 1-3 and the Examples of the reference.) In fact, the metal salt (e.g., NaCl) is removed by vaporization at vacuum condition during the sintering process of the metal (e.g., nickel). (Please see column 1, line 58 to column 2, line 2 of the reference.) On the contrary, the present invention uses a water-soluble metal salt as a synthetic raw material in the process of making the porous material. This is clearly recited in Applicants' independent claims 34 and 35.

Thus, the role of the volatile grained metal salt of Gutjahr et al. is entirely different from the water-soluble metal salt of the present invention, i.e., as a synthetic raw material in the process of making the porous material. The volatile grained metal salt of Gutjahr et al. is merely mixed with a powder of nickel, etc. as a synthetic raw material, and is not solubilized with water. This is in sharp contrast to Applicants' claimed process, wherein the first step of the method is to prepare an aqueous viscous solution of a water-soluble metal salt and dextran.

Applicants respectfully assert that one of ordinary skill in the art would not have looked to the teachings of Gutjahr et al. from the teachings of Hoshino et al., absent the direction of Applicants' disclosure. Thus, any assertion that one of ordinary skill in the art would have made these changes can only be based on hindsight, after reading the teachings of Applicants' disclosure. As stated by the Supreme Court in KSR International Co. v. Teleflex Inc., "the

factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” (See KSR International Co. v. Teleflex Inc., 237 S. Ct. 1727 (U.S. 2007), referring to Graham v. John Deere Co. of Kansas City, 86 S. Ct. 684, which warned against a “temptation to read into the prior art the teachings of the invention in issue” and instructing courts to “guard against slipping into the use of hindsight”. Thus, for this reason alone, the rejection is untenable.

Additionally, the Examiner takes the position that one would merely “substitute” the soluble metal salt of Gutjahr et al. for the metal powder of Hoshino et al. As stated in MPEP 2141, in the Examination Guidelines for Determining Obviousness Under 35 U.S.C. § 103(a), the key to supporting any rejection under 35 U.S.C. § 103(a) is the clear articulation of the reasons why the claimed invention would have been obvious.

In the present case, the Examiner appears to be relying on the rationale that the simple substitution of one known element for another would provide predictable results. MPEP 2143 provides a more detailed discussion, stating that in order to reject a claim based on this rationale, the Examiner must resolve the *Graham* factual inquiries, and *then* provide the following:

- (1) a finding that the prior art contained a device (method, product, etc.) which differed from the claimed device by the substitution of some components (step, element, etc.) with other components;
- (2) a finding that the substituted components and their functions were known in the art;
- (3) a finding that one of ordinary skill in the art could have substituted one known element for another, and the results of the substitution would have been predictable; and
- (4) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

Additionally, the MPEP states that the rationale to support a conclusion that the claim would have been obvious is that the substitution of one known element for another yields predictable results to one of ordinary skill in the art. If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.

In the current case, the Examiner has not provided evidence that the substitution of the water soluble salt of Gutjahr et al. for the metal powder of Hoshino et al. would yield predictable results. Furthermore, as discussed above, the purpose of the water soluble salt of Gutjahr et al. is quite different from the present invention, and from Hoshino et al., thus further suggesting that the substitution suggested by the Examiner would not yield predictable results. Thus, according to MPEP 2143, the Examiner's rationale for obviousness is inappropriate.

Accordingly, Gutjahr et al. fail to remedy the deficiencies of Hoshino et al., because Gutjahr et al. fail to teach or suggest the step of preparing an aqueous viscous solution of water-soluble metal salt and dextran, as required by Applicants' claims. Furthermore, the teachings of Gutjahr et al. do not provide any motivation for including dextran as a binder in the mixture subjected to sintering, because it is used for a battery electrode, and thus the required shape of the product is relatively arbitrary.

As discussed above, the Examiner relies on the Jones et al. reference as teaching dextran. However, the Jones et al. reference is related to a production method of hollow microspheres (particulates) by spray drying a dispersion of aluminosilicate material. Accordingly, the object of using dextran is entirely different in Jones et al., since the reference exemplifies dextran as a viscosifying agent (e.g., column 3, lines 51-60) for making "a particulate". That is, dextran is used in Jones et al. to adjust the dispersion for spray drying treatment, which contains aluminosilicate material of a high specific gravity. The viscosifying agent of Jones et al. does not work to form a sponge-like structure, as in the present invention, nor does the viscosifying agent directly contribute to the forming of the hollow structure. Further, the porous material of Jones et al. is different, as the reference produces a hollow microsphere, while the present invention produces a bulk sponge-like material.

Similar to the discussion above regarding Gutjahr et al., Applicants respectfully assert that one would not have looked to the teachings of Jones et al., without the direction of Applicants' specification. Additionally, there is no discussion as to why the asserted substitution would achieve predictable results.

Thus, although Hoshino et al. teach a method of making a porous metallic metal powder comprising the steps of forming an aqueous mixture of one or more metal powders, an organic

solvent, a water-soluble resin binder, a plasticizer, and water, and the steps of forming a molded product, burning, and sintering, the metal powder of Hoshino et al. is not soluble in water. (This is acknowledged by the Examiner.) Therefore, it is difficult to mix and disperse the metal powder homogeneously in the molded product.

Further, as also acknowledged by the Examiner, Hoshino et al. fail to teach or suggest the use of dextran. Although Hoshino et al. use additives such as a plasticizer, an organic solvent, and surfactants, these are used for the purpose of foaming which contribute to the formation of pore structure in the product, which is entirely different from the present invention.

For the reasons discussed above, one of ordinary skill in the art would not have looked to either of the secondary references to remedy the deficiencies of Hoshino et al. Accordingly, the subject matter of Applicants' claims is patentable over the cited combination of references. Applicants respectfully request that the above-rejection be withdrawn.

Conclusion

Therefore, in view of the foregoing amendment and remarks, it is submitted that the ground of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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By: 2009.04.15 15:45:52 -04'00'

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April 15, 2009